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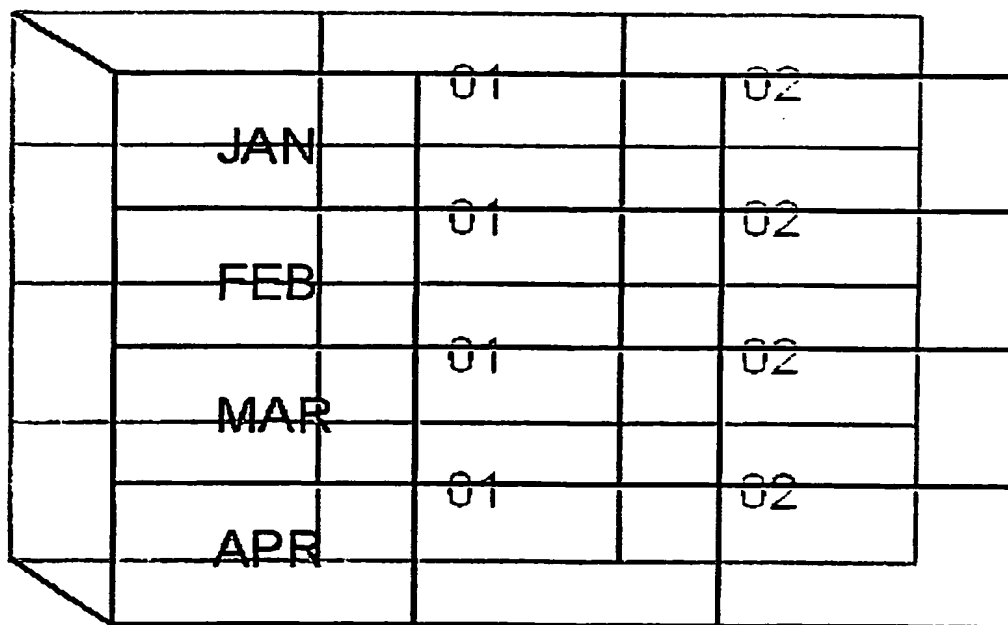
PCT

(10) International Publication Number
WO 01/15128 A1

- (51) International Patent Classification⁷: **G09G 3/36, 5/397, G06F 19/00, G02F 1/1347** (74) Agents: SIMS, Anthony, W. et al.; 29 Clarence Street, Private Bag 3140, Hamilton 2001 (NZ).
- (21) International Application Number: PCT/NZ00/00162 (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
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- (30) Priority Data: 337333 19 August 1999 (19.08.1999) NZ (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- (71) Applicant (*for all designated States except US*): DEEP VIDEO IMAGING LIMITED [NZ/NZ]; Airport Road, Mystery Creek, RD 2, Hamilton 2001 (NZ).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): ENGEL, Gabriel, Damon [US/NZ]; Flat 4, 19 Hammond Street, Hamilton (NZ). WITEHIRA, Pita [NZ/NZ]; Devine Road, RD 3, Hamilton (NZ).
- Published:
— With international search report.
— Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.

[Continued on next page]

(54) Title: DATA DISPLAY FOR MULTIPLE LAYERED SCREENS



(57) Abstract: A method of displaying data on a multilevel screen display assigns screen designation codes to respective groups of data, to determine the physical screen on which each group of data is displayed. The screens may comprise layered liquid crystal displays. The method is suitable for spreadsheet software, where a user is able to see overlaying spreadsheets simultaneously.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/NZ00/00162

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. : G09G 3/36, 5/397, G06F 19/00, G02F 1/1347

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: G02B, G02F, G06F, G09G, H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DWPI, JAPIO Keywords: screen, display: overlap, layer, multi; behind, overlap, superimpos, multilevel, layer: graphic, image, data: spreadsheet; program, software, code, driver; three dimensional

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 5764317 A (SADOVNIK ET AL.) 9 June 1998 Columns 7-8, Figures 1-4	1 2-10, 12
X	US 4472737 A (IWASAKI) 18 September 1984 Columns 2-4, Figures 1-3	1
Y	EP 595387 A (INTERNATIONAL BUSINESS MACHINES CORPORATION) 4 May 1994 Whole document	2-10, 12

☒ Further documents are listed in the continuation of Box C ☒ See patent family annex

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

15 December 2000

Date of mailing of the international search report

29 DEC 2000

Name and mailing address of the ISA/AU

AUSTRALIAN PATENT OFFICE
PO BOX 200, WODEN ACT 2606, AUSTRALIA
E-mail address: pct@ipaustrialia.gov.au
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/NZ00/00162

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 454423 A (TFE HONG KONG LIMITED) 30 October 1991 Whole document	1
A	Derwent Abstract Accession No. 98-024070/03, Class V04, JP 09-282357 A (ZUKEN KK) 31 October 1997 Abstract	1-10, 12
A	Patent Abstracts of Japan, JP 08-036375 A (SEIKO EPSON CORP) 6 February 1996 Abstract	1-10, 12

INTERNATIONAL SEARCH REPORT

International application No.

PCT/NZ00/00162

Box I Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims No : 11
because it relates to subject matter not required to be searched by this Authority, namely:
A mere presentation of information (PCT Rule 39.1(v)).
2. ☐ Claims Nos :
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos :
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims: it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/NZ00/00162

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report			Patent Family Member		
US	5764317	NONE			
US	4472737	NONE			
EP	595387	JP	6203136	US	5528259
EP	454423	GB	2245092		
JP	9282357	NONE			
JP	8036375	NONE			
END OF ANNEX					

CLAIMS:

1. A method for creating a visual effect in the display of software wherein the software is for the manipulation of data,

characterised by the steps of
 - a) assigning a particular screen designation code to a first group of data,

and
 - b) assigning other screen designation codes to second and other groups of data as desired,

wherein the screen designation code determines which physical screen the group of data is displayed in a multi-level screen display.
2. A method as claimed in claim 1 wherein the software is spreadsheet software.
3. A method as claimed in either claim 1 or claim 2 wherein the groups of data correspond to a particular tab selected on the screen.
4. A method as claimed in any one of claims 1 to 3 wherein one of the groups of data is formula corresponding to values in the cells in another group of data.
5. A method as claimed in any one of claims 1 to 4 wherein the second or other groups of data is a wrap around or continuation of a page or spreadsheet partially shown in the first group of data.
6. A method as claimed in any one of claims 1 to 5 wherein the second or other groups of data contains highlights or colour coding corresponding to the first group of data.
7. A method as claimed in any one of claims 1 to 6 wherein the second or other

groups of data includes hyperlinks from one part of the display to another part.

8. A method as claimed in any one of claims 1 to 7 wherein the second or other groups of data includes error messages.
9. A method as claimed in any one of claims 1 to 8 wherein the second or other groups of data have the ability in at least parts of them to enable the user to scroll through information on a particular screen.
10. A method as claimed in any one of claims 1 to 9 wherein the second or other groups of data contains tips or useful information pertaining to the first group of data.
11. Media which carries instructions for the operation of the method substantially claimed and/or described.
12. A method substantially as herein described with reference to and as illustrated by the accompanying drawings.

P. ENT COOPERATION TREA

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

SIMS, Anthony, W.
James & Wells
Level 12, KPMG Centre
Private Bag 3140
Hamilton 2001
NOUVELLE-ZÉLANDE

Date of mailing (day/month/year) 27 août 2001 (27.08.01)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 18034/3X103	
International application No. PCT/NZ00/00162	International filing date (day/month/year) 18 août 2000 (18.08.00)

1. The following indications appeared on record concerning:			
<input type="checkbox"/> the applicant	<input type="checkbox"/> the inventor	<input checked="" type="checkbox"/> the agent	<input type="checkbox"/> the common representative
Name and Address SIMS, Anthony, W. 29 Clarence Street Private Bag 3140 Hamilton 2001 New Zealand		State of Nationality	State of Residence
		Telephone No. 64 7 839 3039	
		Facsimile No. 64 7 839 0608	
		Teleprinter No.	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:			
<input type="checkbox"/> the person	<input type="checkbox"/> the name	<input checked="" type="checkbox"/> the address	<input type="checkbox"/> the nationality <input type="checkbox"/> the residence
Name and Address SIMS, Anthony, W. James & Wells Level 12, KPMG Centre Private Bag 3140 Hamilton 2001 New Zealand		State of Nationality	State of Residence
		Telephone No.	
		Facsimile No.	
		Teleprinter No.	
3. Further observations, if necessary:			
4. A copy of this notification has been sent to:			
<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned		
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned		
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:		

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Beatriz LARGO Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE
 in its capacity as elected Office

Date of mailing (day/month/year) 04 May 2001 (04.05.01)	
International application No. PCT/NZ00/00162	Applicant's or agent's file reference 18034/3X103
International filing date (day/month/year) 18 August 2000 (18.08.00)	Priority date (day/month/year) 19 August 1999 (19.08.99)
Applicant ENGEL, Gabriel, Damon et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
 19 February 2001 (19.02.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Claudio Borton Telephone No.: (41-22) 338.83.38
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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 18034/3X103	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International Application No. PCT/NZ00/00162	International Filing Date (day/month/year) 18 August 2000	Priority Date (day/month/year) 19 August 1999
International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁷ G09G 3/36, 5/397, G06F 19/00, G02F 1/1347		
Applicant DEEP VIDEO IMAGING LIMITED et al		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2.	This REPORT consists of a total of 6 sheets, including this cover sheet. <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of 2 sheet(s).
3.	This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input checked="" type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input checked="" type="checkbox"/> Certain defects in the international application VIII <input checked="" type="checkbox"/> Certain observations on the international application

Date of submission of the demand 19 February 2001	Date of completion of the report 11 July 2001
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer MICHAEL HALL Telephone No. (02) 6283 2474

I. Basis of the report

1. With regard to the elements of the international application:*
- ☐ the international application as originally filed.
- ☒ the description, pages 1-10, as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☒ the claims, pages , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages 1-2, received on 1 May 2001 with the letter of 27 April 2001
- ☒ the drawings, pages 1-3, as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☐ the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of
2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language which is:
- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).
3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished
4. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.
5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be nonobvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos: 11-12

because:

☒ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

Claim 11 relates to a mere presentation of information [PCT Rule 67.1(v)]

Claim 12 relies on reference to the drawings [PCT Rule 6.2(a)]

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claim Nos. 11

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-10	YES
	Claims	NO
Inventive step (IS)	Claims 1-10	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-10	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

Citations

D1 : US 5764317

D2 : EP 595387

Note: It is assumed for the purposes of this report that "data" in the claims refers to *mathematical* data (see Box VIII).

NOVELTY (N)

D1 and D2 represent the closest prior art. D1 discloses an interactive multilevel display for representing depth, with different images displayed on different screens (column 6 lines 51-65, columns 7-8, Figures 1-4). However, D1 does not teach the display of different groups of mathematical data on different screens, nor simultaneous display of the groups of data, as per claim 1. D2 discloses the display of multiple spreadsheet pages via corresponding layers of data in a simulated three-dimensional display (column 2 lines 4-19, column 5 line 52 to column 6 line 35, Figure 3). However, D2 does not teach the use of a multilevel display wherein each data layer corresponds to a different physical screen, nor simultaneous display of the data layers, as per D1. Hence the claims are novel in the light of the prior art.

The teachings of D1 and D2 provide an obvious combination for the person skilled in the art wishing to improve the simulated three-dimensional display of D2, wherein the overlapping layers in D2 are mapped to the physical screen layers of D2 to provide a true three-dimensional display. However, no obvious combination of D1 and D2 teaches or suggests simultaneous display of the groups of data on different screen layers, because in D1 the screens show images in sequence (eg, column 7 lines 44-63 of D1). Hence the claims have an inventive step over the prior art.

INDUSTRIAL APPLICABILITY (IA)

The subject matter of the claims is applicable to the operation of multilevel screen display systems.

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

The claim page numbering does not follow on in sequence from the description page numbering [PCT Rule 11.7(a)].

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. The claims are not clear with respect to the type of data being manipulated: in a sense *anything* displayed on a screen could be described as "pictorial" data. Perhaps, noting page 1 line 5-9, it would be clearer if "data" was replaced by, for example, "mathematical data", or "numerical and/or graphical data".
2. Claim 1 is not clear with respect to "the group of data is displayed simultaneously in a multi-level screen display", at the end of the claim. It appears, noting paragraph 1 of the applicant's response, that something similar to "the group of data is displayed in a multilevel screen display, and where the *groups* of data are simultaneously displayed" is intended.